Appendix

APPENDIX I - Street Classification

A. Functional Classification

The width, street configuration, alignment, and design speed of a street is related to its functional classification. For the purpose of these guidelines, the following functional classifications shall apply.

1. **Alley:** A roadway, usually unnamed, which primarily provides secondary vehicular access to the rear and side entrances of abutting property. It should be a minimum of 20 ft (6m) and a maximum of 24 ft (7.2m) in width.

2. **Private Street:** A street that provides, primarily, direct access to abutting property. It carries low vehicular movement, low-to-heavy pedestrian movement, and low-to-moderate bicycle movement. It has the same overall standards, design and construction as a public street with the exception that the responsibility for maintenance is private.

3. **Pedestrianway/Bikeway:** A facility that provides, primarily, for pedestrian and bicycle circulation between two closely spaced (250 feet (*75 m*) or less) streets. It has a walkway/ riding surface and landscaping, and may include pedestrian-scale lighting and an underground utility corridor.

4. **Bike Path:** A facility that provides exclusively for bicycle circulation along major corridors. It has an all-weather riding surface.

5. **Transitway:** A street that provides, primarily, for moderate-to-heavy transit movement and moderate-to-heavy pedestrian movement in a pedestrian/transit mall setting, with commercial retail, food service, and entertainment uses. It has a narrow transit roadway, wide sidewalks, street trees, traffic safety street lighting, and landscaping. It may include planter boxes, pedestrian-scale lighting, and other pedestrian amenities, and an underground utility corridor.

6. **Local Street:** A street that provides, primarily, direct access to abutting property. It carries low vehicular movement, low-to-heavy pedestrian movement, and low-to-moderate bicycle movement. It has on-street parking, street trees, traffic safety street lighting, and sidewalks. It may include landscaping, pedestrian-scale lighting, and underground utilities.

7. **Collector Street:** A street that primarily provides movement between local/collector streets and streets of higher classifi- cation and, secondarily, provides access to abutting property. It carries low-to-moderate vehicular movement, low-to-heavy pedestrian movement, moderate-to-heavy bicycle movement, and low-to-moderate transit movement. It has on-street parking, street trees, traffic safety street lighting, and sidewalks. It may also include landscaping, pedestrian-scale lighting, and underground utilities.

8. **Major Street:** A street that primarily provides a network connecting vehicles and transit to other major streets and primary arterials, and to the freeway system and secondarily providing access to abutting commer-cial and industrial property. It carries moderate-to-heavy vehicular movement, low-to-high pedestrian and bicycle movements, and moderate-to-high transit movement. It has a raised center median, street trees, traffic safety street lighting, and sidewalks, and may include landscaping, pedestrian-scale lighting, underground utilities, on-street parking, and/or bike lanes.

9. **Primary Arterial:** A street that primarily provides a network connecting vehicles and transit to other primary arterials and to the freeway system. It carries heavy vehicular

movement while providing low pedestrian movement and moderate bicycle and transit movements. It has a raised center median, bicycle lanes, street trees, traffic safety street lighting, sidewalks, and no access from abutting property. It may include under-ground utilities.

10. **Rural Local Road:** A road in agricultural, natural open space, and large lot (greater than 2.5 acres) residential areas that primarily provides direct access to abutting property. It carries low vehicular movement, low pedestrian movement, and low bicycle movement. It may include traffic safety street lighting and underground utilities. It typically does not have sidewalks or landscaping.

11. **Rural Collector Road:** A road in agricultural, natural open space, and large lot (greater than 2.5 acres) residential areas that primarily provides movement between local and collector roads and roads or streets of higher classification and secondarily provides access to abutting property. It carries low-to-moderate vehicular movement, low pedestrian movement, low-to-moderate bicycle movement, and low transit movement. It may include traffic safety street lighting and underground utilities. It typically does not have sidewalks or landscaping.

B. Boulevards

The progress Guide and General Plan and various community plans designate certain streets as being of great importance to a community and recommend special treatment to recognize this. The Bay-Park Link and Broadway in Centre City are two such examples. The recommendations may call for the street to be designed as a boulevard. A boulevard is defined as “a street or promenade planted with trees.”

The Boulevard Book [1] describes three boulevard types:

1. A street with a wide central landscaped median flanked on either side by roadways and sidewalks. The central median may be a pedestrian promenade or planted with grass.

2. A street with a wide central roadway and broad, tree-lined sidewalks along each side.

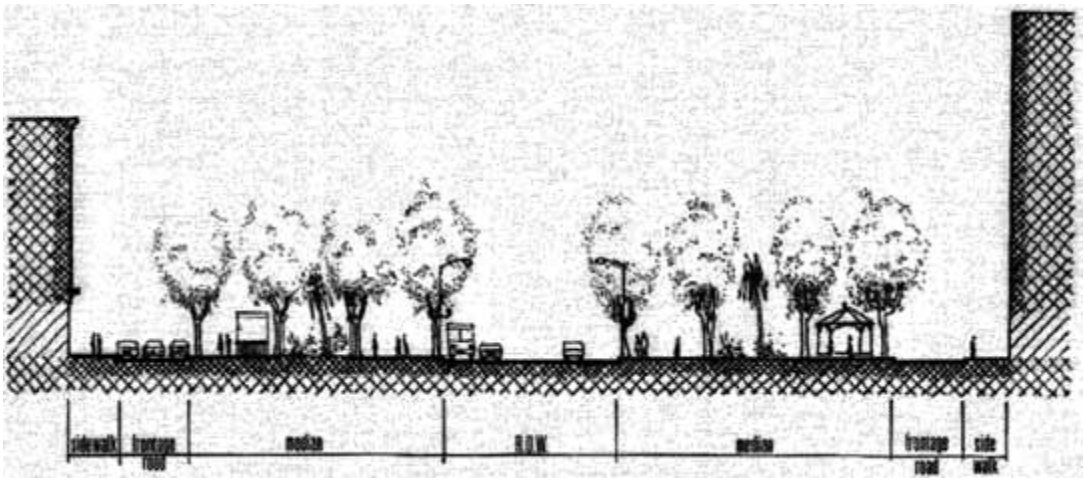
3. A multi-way boulevard is designed to separate through traffic from local traffic and, often, to provide special pedestrian ways on tree-lined malls. It is characterized by a central roadway of at least four lanes for generally fast and non-local traffic. On either side of this roadway are tree-lined medians that separate it from parallel, one-way side access roads for slow-moving traffic.

Each street designated as a boulevard will require a unique and specialized design treatment; therefore, no standards are provided in the Street Design Manual. Boulevard designers are referred to the design and policy guidelines found in The Boulevard Book cited above.

[1] Allan B. Jacobs, et al., MIT Press, 2000


A median on Avenida da Liberdade


Eastern Parkway Median


sidewalk
median
R.O.W.
median
side walk

APPENDIX II–Land Use

A. Open Space
Land protected for outdoor recreation and education, for scenic and visual enjoyment, and for controlling urban form and design. Environmentally sensitive lands are also preserved in open space.

Open Space-Park
Public parks and facilities, once they are dedicated as park land, and providing for various types of recreational needs of the community.

Open Space-Conservation
Land preserved for the purpose of protecting natural and cultural resources and environmentally sensitive lands.

Open Space-Floodplain
Land within floodplains where development is controlled to protect the public health, safety, and general welfare, and land areas identified by the flood insurance rate maps on file with the City of San Diego Floodplain Administrator.

B. Agriculture
Areas that are rural in character and are designated for agricultural uses or are not designated for long-term agricultural use but are awaiting development at urban intensities. Includes all types of agricultural uses and some minor agricultural sales.

C. Residential
Large Lot Single Dwelling Residential
Single dwelling units on large lots with some accessory agricultural uses. Applies to areas that are rural in character. Lots are greater than 2.5 acres. Densities are 0.4 dwelling units per acre or less.

Single Dwelling Residential
Single dwelling units on individual lots that have a variety of lot sizes and residential product types. Lot sizes range from 3,000 square feet to 2.5 acres. Densities range from 0.4 dwelling units per acre to 8.7 dwelling units per acre.

Low Density Multiple Dwelling Residential
Two dwelling units per lot, with lot sizes ranging from 4,000 square feet to over 6,000 square feet and densities up to 21.8 dwelling units per acre. Includes townhouse developments with densities up to 19.8 dwelling units per acre.

Medium to Very High Density Multiple Dwelling
More than two dwelling units per lot with densities ranging up to 217.8 dwelling units per acre.

D. Commercial
Includes a wide range of uses for the employment, shopping, services, recreational, and lodging needs of the residents and visitors to the City of San Diego. Also includes mixed use development.

Neighborhood Commercial
Smaller scale, lower density developments that are consistent with the character of the surrounding residential areas. May include mixed use (commercial/ /residential). Primarily located along local and selected collector streets.

Pedestrian-Oriented Commercial Retail
Developed in a pedestrian-oriented pattern. A functional, convenient, and pleasant environment has been created for people arriving on foot, bicycle, and transit. Also accessible by the automobile.

Community Commercial
Developments with community-serving commercial services, retail uses of moderate

intensity and small-to-medium scale. Includes shopping centers and auto-oriented strip commercial areas. Primarily located along collector streets, major streets, and public transportation lines.

Regional Commercial
Has the broadest mix of retail, wholesale, commercial service, and business/professional office uses. Includes large scale, high intensity developments. Primarily located along arterials, major streets, and major public transportation lines.

Commercial Office
Includes employment uses together with limited complementary retail and medium-to-high density residential development.

Visitor Commercial
Provides for the lodging, dining, and recreational needs of both tourists and the local population.

Urban Village
An Urban Village is a compact pattern of land use including housing, public parks and plazas, offices, stores, and major transit stops on the existing and planned transit system, where pedestrian and bicycle activity is desired. Urban Villages are characterized by interconnected streets, building entries along the street, and architectural features and outdoor activities that encourage pedestrian and bicycle activity and transit accessibility. Urban Villages have their highest intensity of development focused near transit, and a mix of land uses convenient to residents and employees.

E. Industrial
Includes a wide range of industrial/manufacturing activities.

Industrial Park
Includes high quality science and business park development in a campus-like environment characterized by comprehensive site design and substantial landscaping.

Small Lot Industrial
Small-scale industrial activities within urbanized areas.

APPENDIX III–References

A. Federal Government and Other National Sources

Americans With Disabilities Act Accessibility Guidelines, (ADAAG), Department of Justice; Title II, "State and Local Government Programs and Services," and Title III, "Public Accommodations and Commercial Facilities."

A Policy on Geometric Design of Highways and Streets, American Association of State Highway and Transportation Officials

Manual on Uniform Traffic Control Devices, (MUTCD), Federal Highway Administration.

B. State Government and Other Regional Sources

Highway Design Manual, California Department of Transportation (Caltrans).

Standard Plans, California Department of Transportation.

Standard Specifications, California Department of Transportation.

Title 24, Office of the State Architect, Access Compliance Section.

Traffic Manual, California Department of Transportation.

C. Local Sources

Centre City Streetscape Manual, Centre City Development Corporation (CCDC), Document No. 279877, adopted by City Council on April 28, 1992, and filed in the Office of the City Clerk.

Designing for Transit, A Manual for Integrating Public Transportation and Land Development in the San Diego Metropolitan Area, Metropolitan Transit Development Board (MTDB), July, 1993.

Drainage Design Manual, City of San Diego, Engineering & Capital Projects Department, Transportation & Drainage Design Division.

Landscape Technical Manual, City of San Diego, Planning Department, Landscape Planning Section; Document No. RR-274506, approved by City Council on October 3, 1989.

Standard Special Provisions Street Lighting & Traffic Signal Systems of the City of San Diego, City of San Diego, Engineering & Capital Projects Department, latest version.

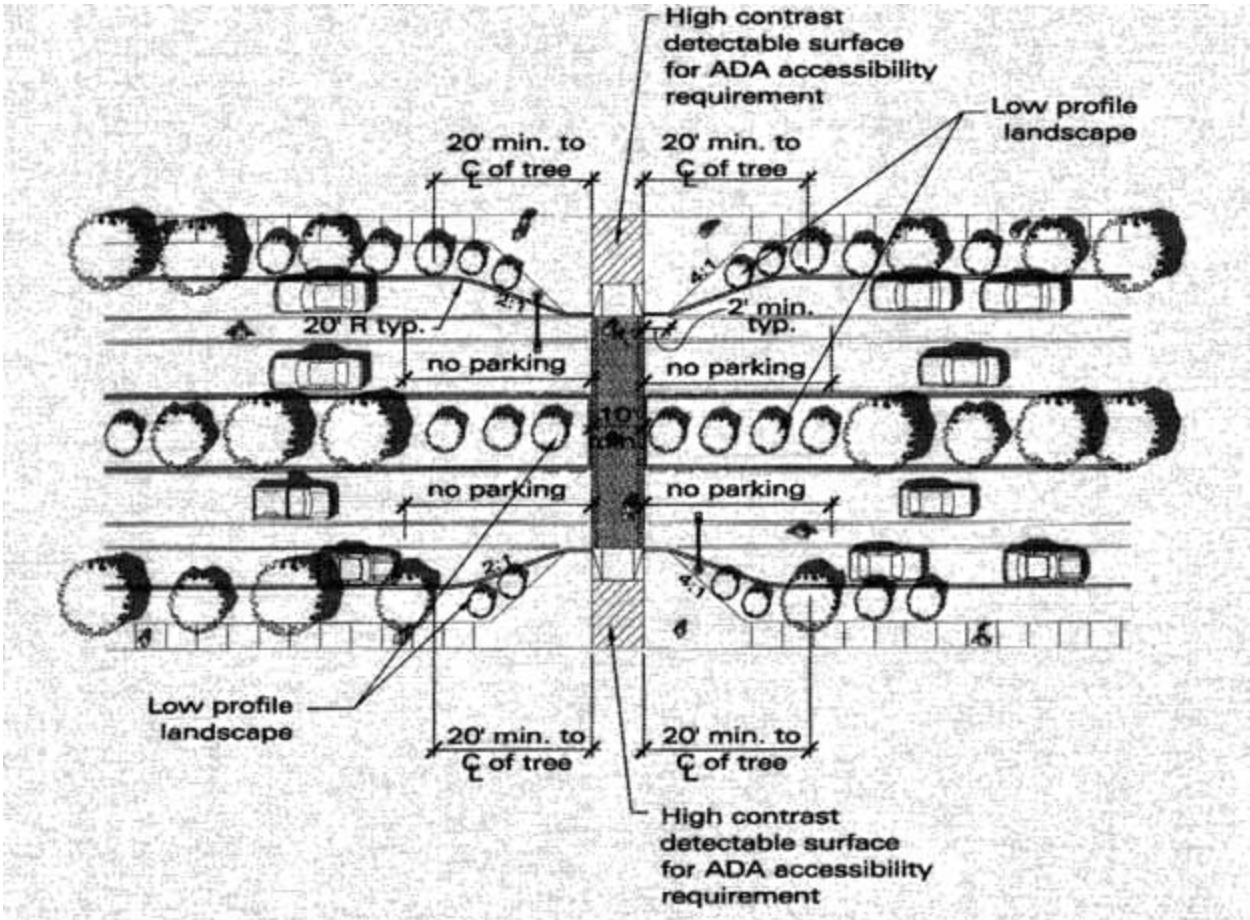
Transportation & Drainage Design Division; Document No. 769814, filed on October 21, 1993 in the Office of the City Clerk.

Standard Drawings of City of San Diego, includes all San Diego Area Regional Standard Drawings; latest version.

Standard Specifications for Public Works Construction, latest version, with City of San Diego Supplement Amendments and Regional Supplement Amendments, Document No. 769818, filed on February 2, 1995 in the Office of the City Clerk.

Transit-Oriented Development Design Guidelines, prepared by Calthorpe Associates for the City of San Diego; approved by the City Council on August 4, 1992.

APPENDIX IV–Midblock Pedestrian Crosswalk



NOTES:

- On multi-lane streets brick pavers or any other approved contrasting textured materials should be considered in crosswalk area.
- Flashing beacons may be installed if State warrants are met.
- Refer to State Traffic Manual for appropriate pavement markings and signange.
- Drainage requirements must be evaluated and addressed.
- Crosswalks must meet traffic requirements per City Council Policy 200-07.
- "No Parking" shall be determined based on visibility requirements set forth in the Caltrans Highway Design Manual.
- Placement of landscaping shall be consistent with the Landscape Technical Manual and shall allow for sight distance requirements.
- Curb extensions as shown may be installed to improve pedestrian visibility and reduce crossing distance.

APPENDIX V–Summary of Traffic Calming Measures

Category	Traffic Calming Device	Description	Applicability	Advantages	Disadvantages
Horizontal Deflections	Chicanes	A chicane is a channelization that causes a series of tight turns in opposite directions in an otherwise straight stretch of road	▪ A chicane may be used on local streets. ▪ It is inappropriate for use on: - Streets classified as collector of higher, - Bus routes, - Emergency response routes, - Where there is limited stopping sight distance, or - Where there is a grade that exceeds 5%	A chicane: ▪ Slows traffic, ▪ Creates opportunity for landscaping, and ▪ Tends not to divert traffic to nearby streets	A chicane may: ▪ Cause some loss of on-street parking, ▪ Increase emergency response time ▪ Impact driveways, or ▪ Affect drainage and street sweeping
	Mini Circles	A raised circular island placed in the center of an intersection	▪ A mini circle may be used on local streets with alternative access points. ▪ It is inappropriate to use on: - Streets classified as collector or higher, - Bus routes, - Emergency response route, - Where there is a grade that exceeds 5% on any approach, or - Where there is limited sight distance	A mini circle: ▪ Slows traffic on each approach, ▪ Creates landscaping opportunity, ▪ Reduces right-of-way conflict, and ▪ Tends not to divert traffic to nearby streets	A mini circle may: ▪ Impact large vehicles' turns, or ▪ Increase emergency response time
	Median Slow Points	A small median or island placed in the center of a roadway that causes traffic to shift its path to the right in order to travel around it. It may be installed on an approach to an intersection or mid-block.	▪ A median slow point may be used on two lane streets. ▪ If installed at an intersection, street should have alternative access points. ▪ It is inappropriate for usage on: - Streets classified as major or higher, or - Where there is limited stopping sight distance	A median slow point: ▪ Slows traffic, ▪ Creates pedestrian refuge area, ▪ Creates landscaping opportunity, and ▪ Tends not to divert traffic to nearby streets	A median slow point may: ▪ Cause some loss of on-street parking, or ▪ Impact large vehicles' turns when placed at intersections

Category	Traffic Calming Device	Description	Applicability	Advantages	Disadvantages
Vertical Deflections	Road Humps	Rounded raised areas placed across the road, approximately 12 feet long, 3.5 inches high, and parabolic in shape. They are most effective when used in groups spaced appropriately to discourage speeding between humps	▪ Road humps may be used on local streets. ▪ Road humps are inappropriate on: - Streets classified as collector or higher, - Emergency response routes, - Bus routes, - Where there is a grade that exceeds 5%, or - Where there is limited stopping sight distance	Road humps: ▪ Slow traffic, and ▪ Discourage short-cutting	Road humps may: ▪ Divert traffic, ▪ Increase noise, or ▪ Increase emergency response time
	Speed Table	Essentially flat-topped road humps often constructed with brick or other textured materials on the flat section. They have gentler effect on buses than road humps.	▪ A speed table may be used on local streets. ▪ It is inappropriate on: - Streets classified as collector or higher, - Emergency response routes, - Where there is a grade that exceeds 5%, or - Where there is limited stopping sight distance	A speed table: ▪ Slows traffic, and ▪ Discourages short-cutting	A speed table may: ▪ Divert traffic, ▪ Increase noise, ▪ Increase emergency response time, or ▪ Impact buses
	Raised Crosswalks	An extension of speed table where street is brought up to sidewalk level	▪ A raised crosswalk may be used on local streets. ▪ It is inappropriate on: - Streets classified as collector or higher, - Emergency response routes, - Where there is a grade that exceeds 5%, or - Where there is limited stopping sight distance	A raised crosswalk: ▪ Slows traffic, ▪ Discourages short-cutting, and ▪ Enhances pedestrian safety	A raised cross walk may: ▪ Divert traffic to nearby streets, ▪ Increase noise, ▪ Increase emergency response time, or ▪ Impact buses ▪ Require special drainage considerations

Category	Traffic Calming Device	Description	Applicability	Advantages	Disadvantages
Intersection Pop-out	Intersection pop-out	Curb extensions that narrow the street at intersections by widening the sidewalks at the point of crossing. It can be used at an intersection to create a street gateway effect visually announcing an entrance to a neighborhood	Intersection pop-outs: ▪ May be used on: - Local streets, - Collector streets, or - Urban major streets ▪ Are inappropriate for usage on: - Major streets, or - Primary arterial streets	Intersection pop-outs: ▪ Improve pedestrian visibility, ▪ Create shorter pedestrian crossing width, and ▪ May reduce vehicle speeds	Intersection pop-outs may: ▪ Impact large vehicle turns, ▪ Impact accessibility by transit vehicles and emergency vehicles, ▪ Require parking removal,
Traffic Diverters	Semi-diverters	A barrier placed at the end of a block that prevents entrance by blocking traffic in one direction of a street and allows exit by permitting traffic in the opposite direction to pass through. It includes provisions for emergency vehicles and continuation of pedestrian or bicycle routing.	A semi-diverter: ▪ May be used on low volume local residential streets ▪ Is inappropriate for usage on: - Emergency response routes - Bus routes, or - Streets classified as collector or higher	A semi-diverter: ▪ Reduces cut-through traffic, ▪ Reduces pedestrian crossing widths, and ▪ Creates opportunity for landscaping	A semi-diverter may: ▪ Divert traffic to other low volume streets, ▪ Increase trip lengths, ▪ Cause loss of parking, ▪ Increase emergency response time, or
Channelization	Regulatory signs, markings, landscaping, or raised islands aimed at motorized, non-motorized, or pedestrian traffic	Channelization may be achieved through right-of-way controls at intersections, controls affecting or restricting the direction or speed of traffic, or design features that physically restrict the movement of traffic	Channelization is site specific and should be evaluated on a case-by-case basis	Channelization may be designed to: ▪ Prevent cut-through traffic ▪ Reduce speed ▪ Create opportunity for landscaping, ▪ Control turning traffic in/out of a neighborhood, or ▪ Physically control pedestrian movements	Channelization may: ▪ Increase trip lengths ▪ Impact emergency response time, or ▪ Impact accessibility

APPENDIX VI–Best Management Practices Available To Address Storm Runoff Water Quality Associated with Street Design

The 1972 Federal Clean Water Act established the National Pollutant Elimination System (NPDES) permit program to regulate the discharge of pollutants to waters of the United States. Governmental agencies in San Diego County collect and discharge storm water and urban runoff containing pollutants through their storm water conveyance systems. These agencies, including the City of San Diego, implement programs to reduce pollutants under NPDES permit requirements commonly known as the Municipal Storm Water Permit for San Diego Copermittees. The City of San Diego is committed to protecting and improving water quality of the rivers, bays, and ocean in the region, and achieving Municipal Permit compliance. To comply with the Municipal Permit, the City will "enforce the use of storm water Best Management Practices (BMPs) to prevent or reduce discharges of pollutants to the municipal storm drain system."

The intent of this appendix is to provide developers, project engineers, and planners with site design concepts or BMPs that could potentially be incorporated into the design of streets to address adverse impacts to water quality associated with storm water runoff. It is important to note that other City regulations, including, but not limited to, the *Storm Water Standards* (scheduled to become effective December 2, 2002), will dictate the mandatory site design, source control and treatment control requirements related to development projects of all types, including streets.

The feasibility of using a BMP listed in this appendix should be evaluated by project engineers on a project-by-project basis. Certain BMPs discussed in the appendix may not be appropriate for a street classification due to constraints associated with site conditions.

A. Effect of Storm Water Runoff From Streets on Water Quality

Storm water runoff from streets contains a variety of pollutants collected and concentrated from impervious surfaces [1]. Streets and other transportation structures typically can comprise between 60 and 70% of an urban city's total impervious area and, streets are almost always directly connected to an underground storm water system[1]. Pollutants collect on impervious surfaces and are conveyed into the storm drain system in higher concentrations following a rain event. Discharge of concentrated pollutants from impervious surfaces to the storm drain system after a significant rain event is referred to as the "first flush".

Urban runoff from a developed site including streets has the potential to contribute pollutants, including oil and grease, suspended solids, metals, gasoline, pesticides, and pathogens to the storm water conveyance system and receiving waters[2]. Primary sources of oil and grease in storm runoff are petroleum hydrocarbon products, motor products from leaking vehicles, esters, oils, fats, waxes, and high molecular-weight fatty acids[2]. Introduction of these pollutants to the water bodies are very possible in association with typical development projects due to the wide uses and applications of some of these products in municipal, residential, commercial, industrial, and construction areas[2]. Elevated oil and grease content from, in part, automobile sources can decrease the aesthetic value of the water body, as well as the water quality[2].

B. Site Design Best Management Practices for Roadways

A BMP incorporated into a street design is primarily intended to minimize the amount of impervious surface. A goal of project site design should involve constructing streets, sidewalks and parking lot aisles to the minimum widths necessary, provided that public safety and a walkable environment for pedestrians are not compromised.

The design of private roadway drainage should consider using at least one of the following (for further guidance, see *Start at the Source* [1999]). (Note: the City may impose the following and other requirements to private roadway designs through the Storm Water Standards [scheduled to be implemented on December 2, 2002]. Consult the Development Services Department for more information.

- Rural swale system: street sheet flows to vegetated swale or gravel shoulder, curbs at street corners, culverts under driveways and street crossings;
- Urban curb/swale system: street slopes to curb, periodic swale inlets drain to vegetated swale/biofilter;
- Dual drainage system: First flush captured in street catch basins and discharged to adjacent vegetated swale or gravel shoulder, high flows connect directly to storm water conveyance system.
- Other methods that are comparable and equally effective within the project.

Private roadways for storm water requirement purposes are defined as low traffic private roads. However, use of these type of site design BMPs could be applied to public road classifications. Descriptions of these systems are discussed below.

1. Descriptions of Best Management Practices for Urban Curb/Swale System Roadways

For streets where a rigid pavement edge is required, curb and gutter systems can be designed to empty into drainage swales. Runoff travels along the gutter, but instead of being emptied into a catch basin, multiple openings in the curb direct runoff into surface swales or infiltration/detention basins[(1)]. The urban curb/swale system design would be appropriate for Local Street, Collector Street, Major Street, Primary Arterial, Expressway and Freeway classifications that require use of curb and gutter.

a. Urban Curb/Swale Inlet Design

Typical, curb and gutter systems collect runoff into an underground pipe system. A swale inlet collects runoff into a surface infiltration system. A diagram and section of a typical urban curb/swale system are shown in Figures 1 and 2. The swale inlet includes features such as cobbles to dissipate flow velocities and minimize erosion from initial first flush of runoff. Swales remove dissolved pollutants, suspended solids (including heavy metals, nutrients), oil and grease by infiltration using the following features: 1) runoff through the swale topography that collects water in a forebay/ settlement basin prior to discharge; and 2) infiltration of runoff into groundwater through vegetative surface layer or Biofilter. [(1)]

Figure 1
Urban Curb/Swale System-Diagram[1]

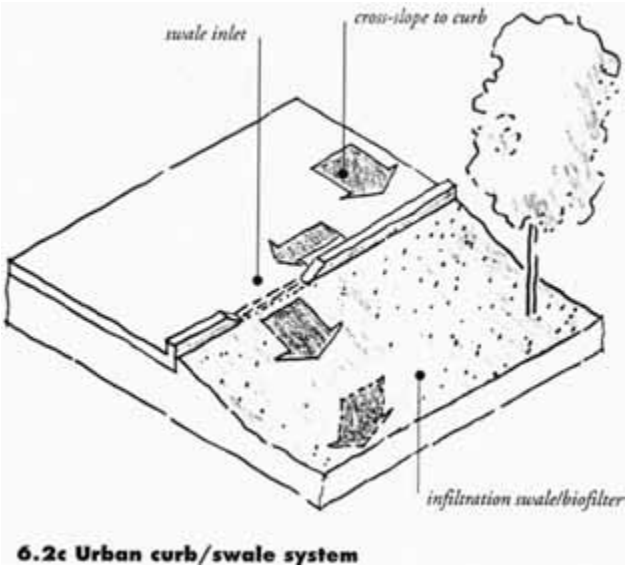
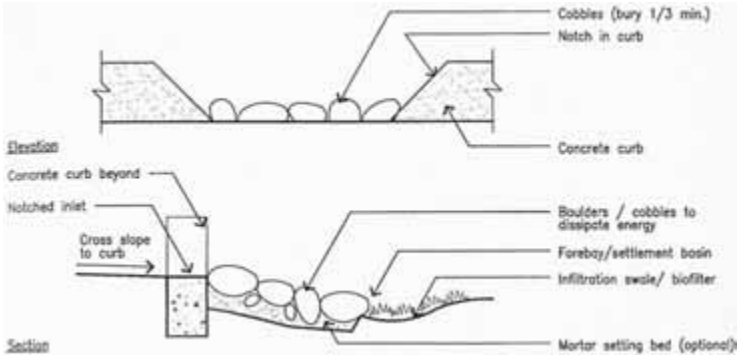


Figure 2
Urban Curb/Swale Inlet Design Section[1]



b. Surface Vegetated Swale/Bio Filter Design

Vegetated swales used in the urban curb/swale design are vegetated earthen channels that convey and infiltrate water and remove pollutants. A grass swale is planted with turf grass; a vegetated swale is planted with bunch grasses shrubs or trees. [1] A photograph as well as sections of typical vegetated swale are shown in Figures 3 and 4.

Figure 3
Vegetative Swale Design Section[1]

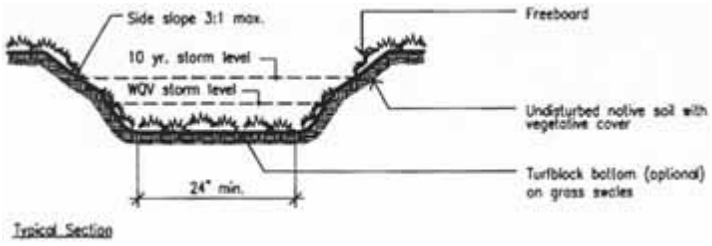
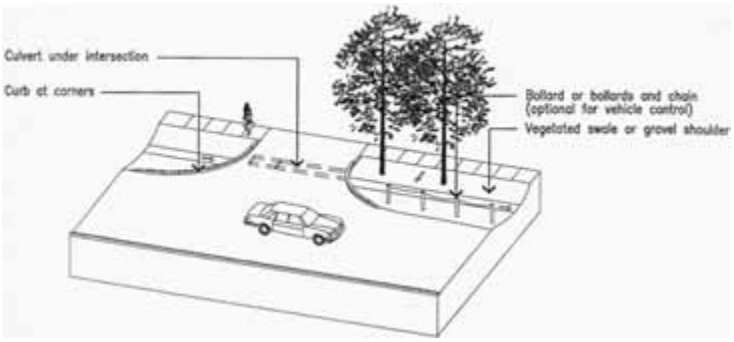


Figure 4
Vegetative Swale – Southbound Interstate 5 near La Costa Avenue Offramp

2. Descriptions of Best Management Practices for Rural Swale System Roadway Classifications

Rural swale systems are a combination of street design elements that allow for surface drainage while simultaneously protecting the roadway edge, organizing parking and allowing for driveway access. (1) A section of a typical rural swale system is illustrated in Figure 5. As shown in Figure 5, curb and gutter is not required. The street is crowned to direct runoff to shoulders where it is collected into a vegetated swale or gravel shoulder. The rural swale system would be appropriate for Private Street, Rural Local Road and Rural Collector Road classifications.

Figure 5
Rural Swale System Diagram(1)

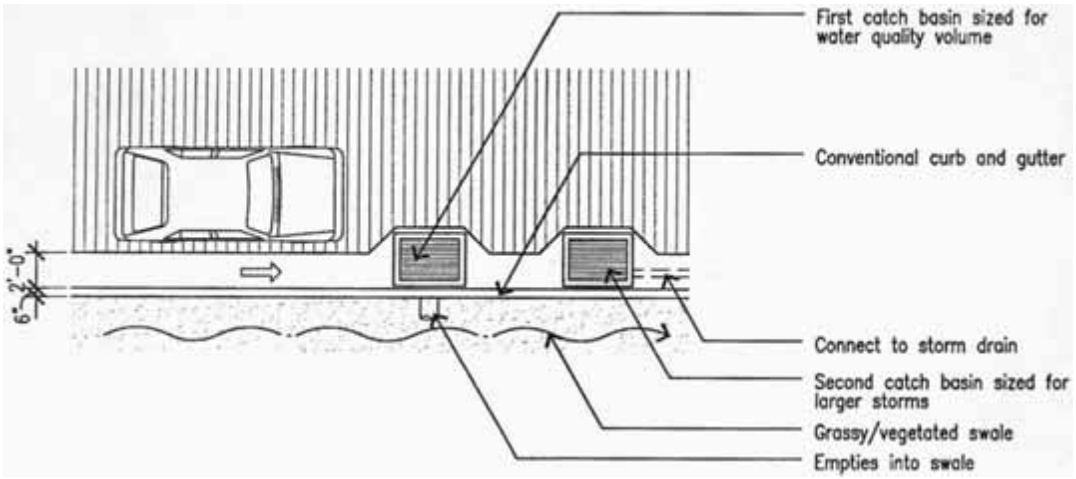


3. Description of Best Management Practices for Dual Drainage Systems

Dual drainage systems provide a pair of catch basins at each inlet point. The first is sized to direct the water quality volume into a landscaped infiltration area, and the second collects the overflow of larger storms and directs it to the storm drain system. A section of a typical dual drainage system is shown in Figure 6. (1) The Dual Drainage system design would be appropriate for Local Street, Collector Street, Major Street, Primary Arterial, Expressway and Freeway classifications that require use of curb and gutter.

As shown in Figure 6, in a dual drainage system two catch basins are located adjacent to each other. The first uphill catch basin involves a design outlet pipe to accommodate the water quality volume and direct to adjacent grass or vegetated swale. When first catch basin is full, water will flow past first basin inlet and enter second catch basin. (1)

Figure 6
Dual Drainage System Diagram(1)

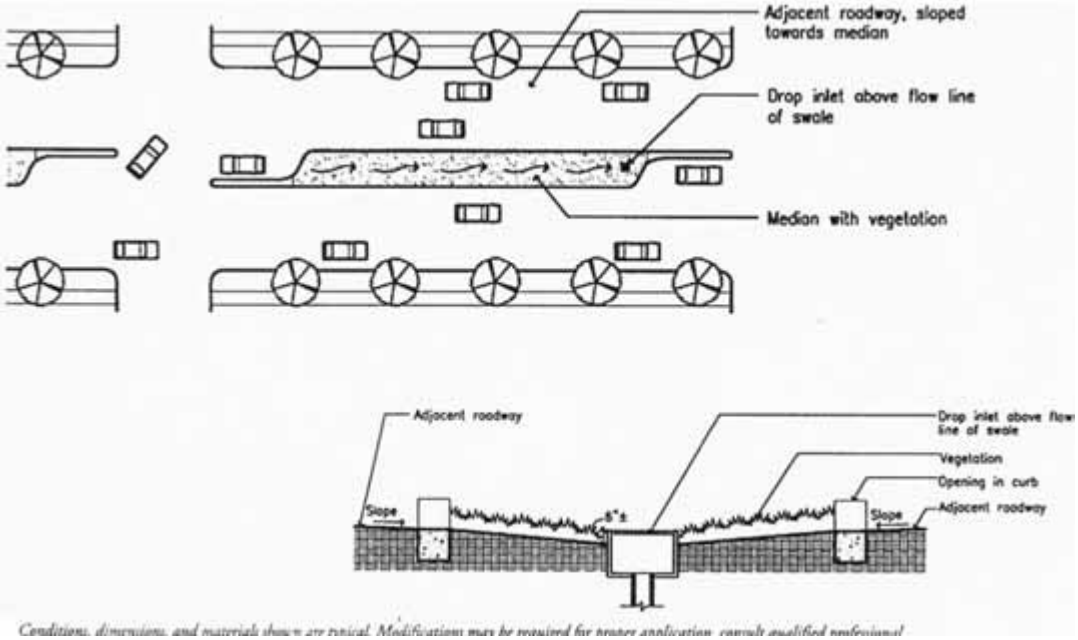


4. Description of Best Management Practices for Concave Medians

Conventional medians are normally designed as a convex surface to shed water onto adjacent pavement and into a curb and gutter system. Concave medians reverse this relationship by designing the median to receive runoff. (1) A diagram and section of a typical concave median is shown in Figure 7.

The infiltration portion of the landscape median can be designed as a landscaped swale or turf-lined biofilter to treat first-flush runoff. Catch basin and underground storm drain systems may be required for high flows depending on the available area for infiltration and the duration that water is retained in the swale. (1)

Figure 7
Concave Median Diagram and Section (1)



5. Description of Best Management Practices for Cul-de-sacs

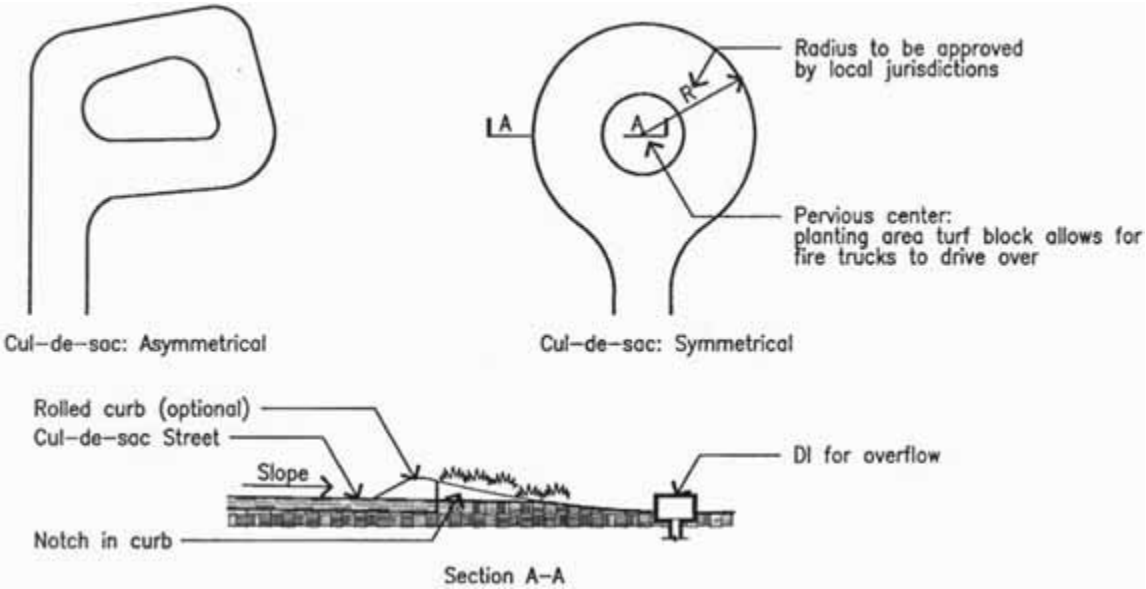
Typical cul-de-sacs are paved across their entire diameter. This large impervious area adds to environmental degradation by increasing runoff. Adding a landscaped area in the center of the cul-de-sac (See Figure 8) can reduce impervious land coverage by 30-40%, depending on configuration, while maintaining the required turning radius. [1]

References

1. Start at the Source, Bay Area Stormwater Management Agencies Association, 1999.

2. Reference Guide for Stormwater Best Management Practices, City of Los Angeles Stormwater Management Division, July 2000, www.lacity.org/SAN/wpd/index.htm.

Figure 8
Cul-de-sac Best Management Practices [1]



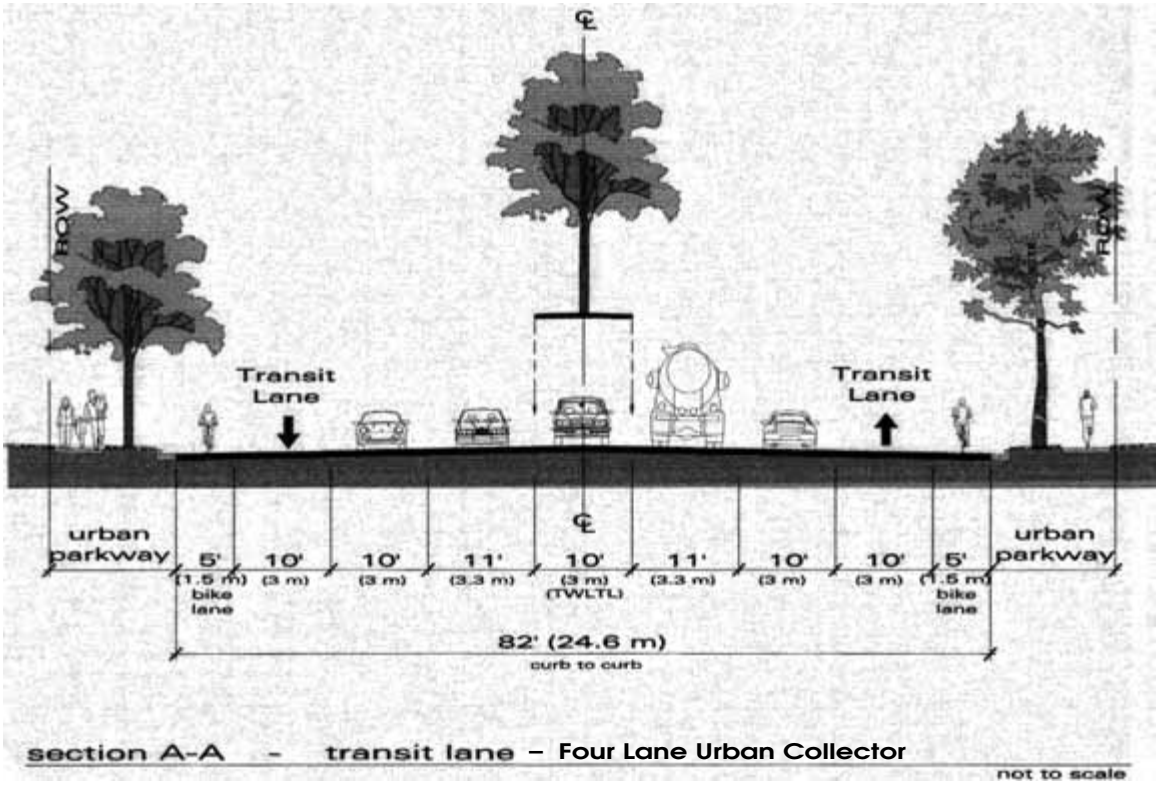
APPENDIX VII – Transit Streets

The Strategic Element of the City of San Diego *Progress Guide and General Plan* and the Transit First initiative of the Metropolitan Transit Development Board recommend major improvements to the region's transit system. These improvements include a system of rubber tire trolleys operated on separate rights-of-way within road alignments.

The first phase includes several "showcase" pilot projects; and, each of them will require a special and unique design solution. This design manual sets forth basic design guidelines for the design of transit streets.

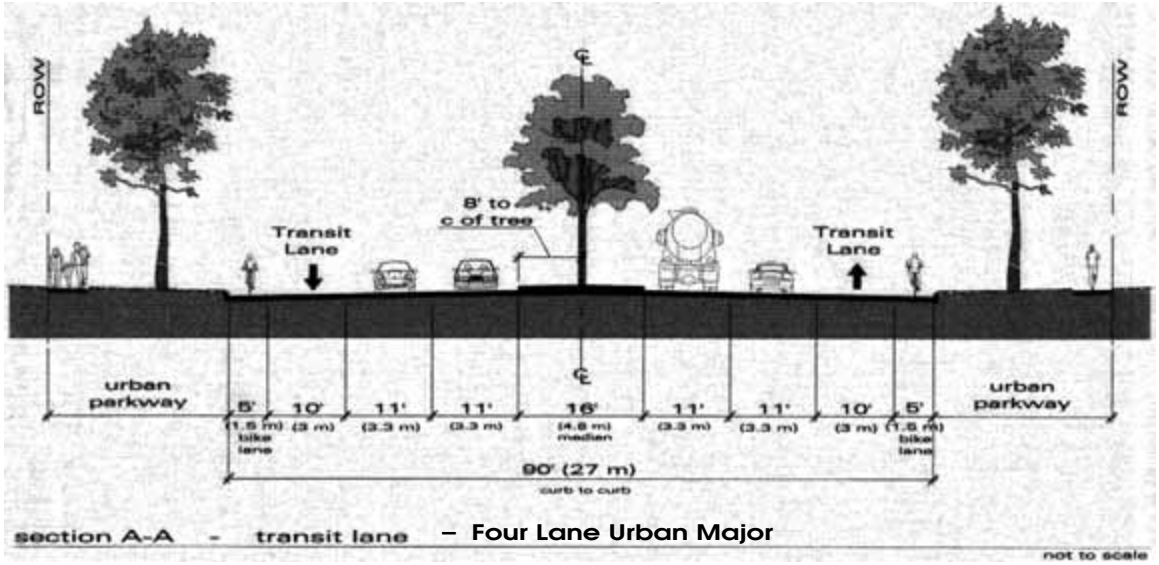
Reference: Designing for Transit, A Manual for Integrating Public Transportation and Land Development in the San Diego Metropolitan Area. MTDB, July 1993.

The following includes few examples of how to accommodate exclusive transit lanes within the public right-of-way.



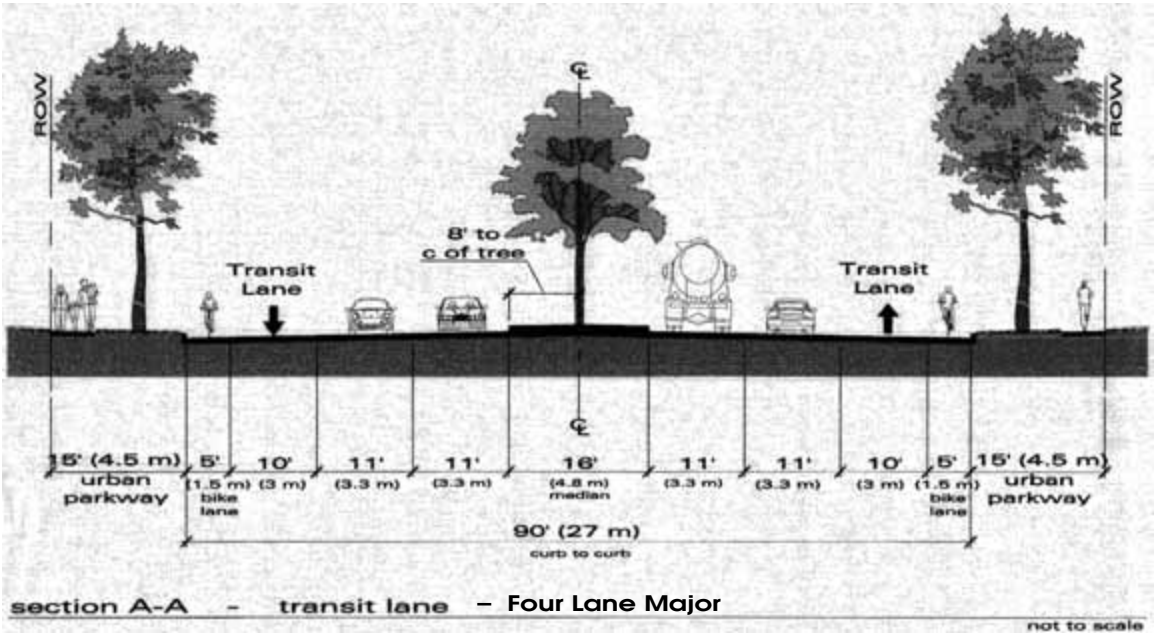
section A-A - transit lane – Four Lane Urban Collector

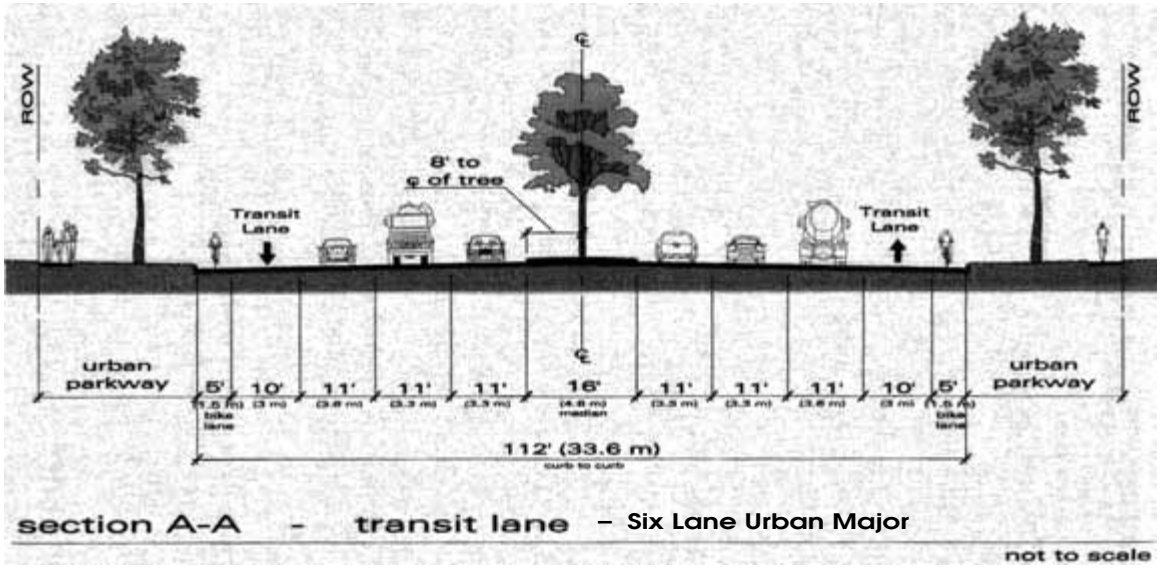
not to scale

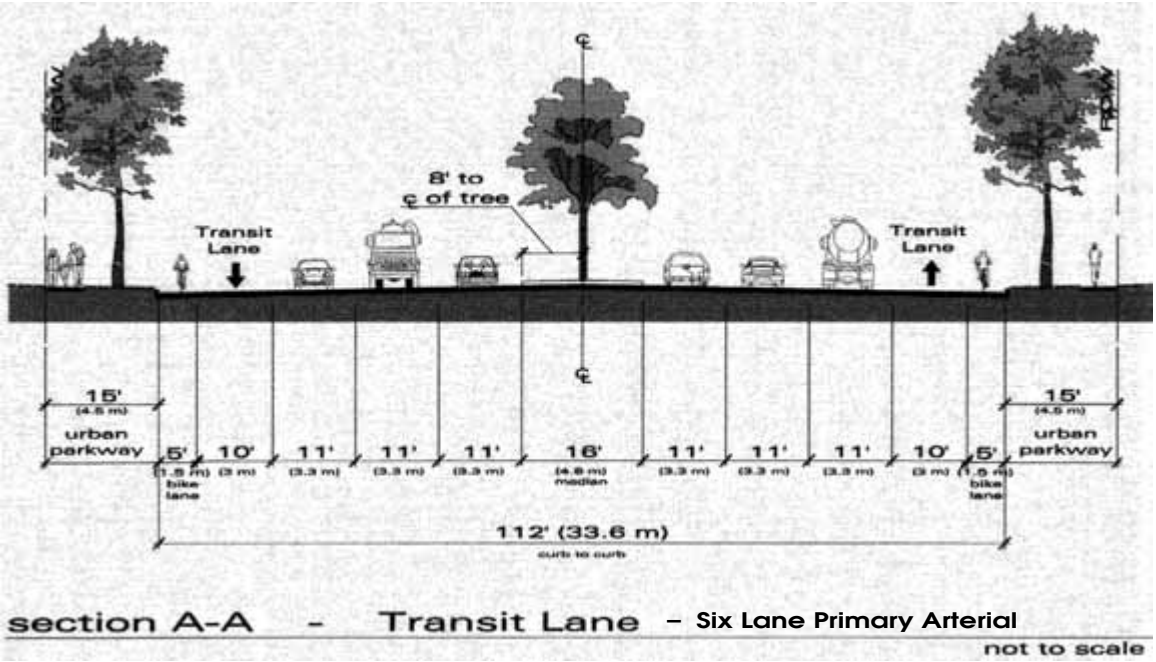


section A-A - transit lane – Four Lane Urban Major

not to scale


ROW
ROW
℄
8' to
℄ of tree
Transit
Lane
Transit
Lane
℄
15' (4.5 m)
urban
parkway
5'
(1.5 m)
bike
lane
10'
(3 m)
11'
(3.3 m)
11'
(3.3 m)
16'
(4.8 m)
median
11'
(3.3 m)
11'
(3.3 m)
10'
(3 m)
5'
(1.5 m)
bike
lane
15' (4.5 m)
urban
parkway
90' (27 m)
curb to curb
section A-A - transit lane – Four Lane Major
not to scale


ROW
ROW
℄
8' to
℄ of tree
Transit
Lane
Transit
Lane
urban
parkway
5'
10'
11'
11'
11'
16'
11'
11'
11'
10'
5'
urban
parkway
112' (33.6 m)
curb to curb
section A-A - transit lane – Six Lane Urban Major
not to scale



section A-A - Transit Lane – Six Lane Primary Arterial

not to scale

APPENDIX VIII–Deviation From Standards Form

CITY OF SAN DIEGO
LAND DEVELOPMENT REVIEW

DEVIATION FROM STANDARDS

CASE/PERMIT/WO NUMBER: _____ COORD: _____

PROJECT DESCRIPTION/?LOCATION: _____

_____

ENGINEER OF WORK: _____ RCE NO._____ EXP DATE: _____

STANDARD BEING DEVIATED FROM : _____

DESCRIPTION OF DEVIATION:

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

ANALYSIS:

_____

_____

_____

_____

_____

_____

REVIEWED BY: _____ DATE: _____

APPROVED BY DEPUTY CITY ENGINEER: _____ DATE: _____

DEPUTY DIRECTOR: _____ DATE: _____

Devfm std REVI(SED 8/19/96

Glossary

Glossary

ADT–Average Daily Traffic: the number of vehicles to pass a given point on a roadway during a 24-hour period on an average day of a given year. Existing volumes may be measured with a recording device (machine counter) placed on the roadway. Existing volumes may also be estimated, or future volumes forecast, with the aid of computerized travel models representing existing or future land use and transportation networks.

Concrete; P.C.C.; A.C.–terms and abbreviations used to describe the materials used in the construction of roadways, bridges, and sidewalks. Concrete and P.C.C. refer to portland cement concrete, a material consisting of portland cement, coarse and fine aggregates, and water. A.C. refers to asphaltic concrete, a material consisting of asphalt cement, coarse aggregates, and fine aggregates.

Design Speed–the maximum safe speed that can be maintained over a specified section of roadway when conditions are so favorable that the design features of the roadway govern.

Easement–an interest in land owned by another that entitles its holder to a specified limited use or enjoyment.

Horizontal Curve–a geometric design feature of a roadway–provides a smooth change in direction to the left or right.

Low Profile Landscaping-plantings with mature height of 30 inches.

Major Street/Minor Street–descriptive terms of the relative traffic volumes on two streets at an intersection. The major street carries the higher volume of traffic and is usually wider than the minor street. At a T-intersection, the major street is the through street and the minor street forms the stem of the "T."

Median–the part of the roadway, wider than a double yellow line, that separates opposing directions of traffic. It is usually raised and delineated by curbs, and may be landscaped. It may also be depressed or level with the traffic lanes.

Parkway–the part of the street between the face of the curb (or edge of the traveled way) and the right-of-way line.

Passing Sight Distance–the distance required for a vehicle to safely overtake a slower vehicle on a two-lane roadway by maneuvering into the lane of opposing traffic and then back into the right lane when past the slower vehicle. It is rarely provided on urban streets, but is common on rural roads in flat or rolling terrain.

Precise Plan–a detailed, long-term plan for the development of a sub-area of a community plan. Generally, a precise plan would include a residential neighborhood, commercial area, industrial area, or some geographical area sharing common facilities or problems. Usually a precise plan proposes specific land uses for each parcel and is often based on a detailed grading plan. In some instances, very specific proposals relative to the layout of buildings, parking, and landscaping are included within the precise plan. A precise plan is adopted by resolution.

Right-of-way–the property dedicated for public roadway.

Single loaded street–a single loaded street is a street serving property (front yard or side yard) on one side only, with no need for access (to a rear yard or to open space) or parking on the other side.

Specific Plan–a tool to implement a general or community plan (policy documents). The minimum contents of a specific plan are

stipulated by state law. At various degrees of detail, specific plans address land use, infrastructure, development standards, and implementation measures. Specific plans are adopted by ordinance.

Stopping Sight Distance–the distance required for a vehicle traveling at a particular speed to come to a safe stop to avoid colliding with an object in the roadway. It is measured with a driver's eye height of 3.50 feet (*1070 mm*) above the roadway and an object height of 6 inches (*150 mm*) above the roadway. The distance includes vehicular travel during the driver's perception of and reaction to the object and the vehicular travel during braking.

Street Tree–a tree adjacent to a street and located within the public right-of-way.

T.O.D. (Transit-Oriented Development)–a mixed-use community within a typical 2,000-foot (*600 m*) walking distance of a transit stop and core commercial area. The design, configuration, and mix of uses emphasize a pedestrian-oriented environment and reinforce the use of public transportation without ignoring the role of the automobile. TODs mix residential, retail, office, open space, and public uses within a comfortable walking distance, making it convenient for residents and employees to travel by transit, bicycle, or foot, as well as by car.

Transit–the carrying of passengers in a bus or trolley along a regularly scheduled route for a fixed, basic fare.

Traveled Way–the lanes of a street or roadway in which the moving vehicles travel; does not include shoulders or parking lanes.

Vertical Curve–a geometric design feature of a roadway–provides a smooth transition between an ascending grade and a descending grade, or vice-versa. A *crest* vertical curve begins with an ascending grade and ends with a descending grade. A *sag* vertical curve begins with a descending grade and ends with an ascending grade.

Visibility Area –Specified areas along intersection corners that should be clear of obstructions that might block a driver's view of potentially conflicting vehicles. The dimensions of the visibility area depend on the design speeds of the intersecting roadways and the type of traffic control used at the intersection.

Index

Index